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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,405	12/11/2003	Sung-Ik Park	51876P439	1181

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EXAMINER

TAYONG, HELENE E

ART UNIT	PAPER NUMBER
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2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/734,405	Applicant(s) PARK ET AL.	
	Examiner HELENE TAYONG	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed on 10/4/08.

Claims 1, 3-6 and 8-10 are pending in this application and have been considered below.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 3-6 and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0140867 filed by Weiss (hereinafter "Weiss") in view of U.S. Patent No. 7,315,579 issued to Karaoguz (hereinafter "Karaoguz") and further in view of U.S. Patent No. 6,744,822 issued to Gaddam et al. (hereinafter "Gaddam") have been considered but are moot in view of the new ground(s) of rejection because of amendments.

Claim Objections

3. Claims 1 and 3-5 are objected to because of the following informalities:

- (1) In claim 1, line 3, change, "transmitting stations" to - - transmitting station - -;
- (2) In claim 1, lines 8, define N, for example, wherein N is 5;
- (3) In claim 1, line 13 and line 22, define M;
- (4) In claim 3, line 2, define N;
- (5) In claim 4, line 3, change, "the value of" to - - a value of - -;
- (6) In claim 6, line 4, define N;
- (7) In claim 6, line 8, define M;

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- (8) In claim 6, line 12, change, the memory” to - - a memory - -;
- (9) In claim 10, line 1, define N;
- (10) In claim 10, line 3, define M. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-6, 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss (US 20020140867 see IDS) in view of Gaddam et al (US 6744822) and further of Karaoguz (US 7315579).

(1) with regards to claim 1;

Weiss in (figs. 1 and 5) discloses a terrestrial digital broadcasting system (pg.1, [0001], lines 2-5), comprising:

a broadcasting station (10) for multiplexing video, voice and additional signals (11) into transport stream (TS) (12) and transmitting the TS (12) to the transmitting stations (20) (pg. 5, [0076]); and

a transmitting station (17) for receiving the TS (12) and broadcasting the TS (12) to receiving stations (21) through a single frequency network (20) (pg. 5, [0076]), wherein the broadcasting station (10) includes:

a transmission synchronization means (16) for inserting a field synchronization header to the TS in a predetermined data field period N, and wherein the transmitting stations include (fig. 5, 16 and pg.4, [0075], lines 3-6 , pg. 9, [0106], lines 7-14):

a transmission synchronization detecting means (fig. 6, 51) for synchronizing the TS transmitted from the broadcasting station based on the field synchronization header (pg.5, [0077]);and

a trellis encoding means (fig. 6, 36 and fig. 12) for generating initialization symbols of a predetermined length in a predetermined data field period M and synchronizing the TS outputted to the receiving stations (pg.5, [0078] and page 11, [0119]-[0120]).

Weiss discloses trellis encoding means (fig. 6, 36 and fig. 12, pg. 11, [0119]-[0120]), a memory (31) and a precoder (36), but Weiss does not disclose wherein the trellis encoding means includes:

(a) initializing output values of a trellis coded modulation (TCM) encoder and a memory of the TCM encoder performing switching to values stored in the memory of the TCM encoder instead of input signals to the TCM encoder every M period, wherein the TCM encoder includes a first feedback loop to initialize the memory of the TCM encoder after receiving the values stored in the memory of the TCM encoder from the first switching unit; and

(b) initializing output values of a precoder and a memory of the precoder by performing switching to values stored in the memory of the precoder instead of input signals to the precoder every M period, wherein the precoder includes a second

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feedback loop to initialize the memory of the precoder after receiving the values stored in the memory of the precoder from the second switching unit.

(c) a first and a second switching unit

(ii) with regards to items (a) and (b) above;

However, Gaddam et al in the same endeavor (Trellis encoder) discloses in (fig. 1, 100 and fig.2, 200) the internal structure of a trellis encoder. Input signals x_1 , x_2 , precoder (110), memory (115), encoder (120), memory (122,125), feed back loops in the precoder and encoder and a mapper 250 (col. 1, lines 25-48 and col.3, lines 9-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the trellis encoder as taught by Gaddam et al in the internal structure of a trellis encoder in order to process input data and generating symbols. The selection of any of these known equivalents to encode data would be within the level of ordinary skill in the art.

(i) with regards to item (a) above;

However, Karaoguz in the same endeavor, TCM encoder with feed back is discloses in (fig.16). A first switch (143) is controlled by SELECT0, a signal sent from the transmit control unit. Data signal D_n0 is feed into the input. A second switch (145) takes in input data D_n1 (col. 10, lines 39-66). In col. 4, lines 19-27 teaches that a switching arrangement can be provided that serves to reroute the inputs to the mapper so as to effect the mapping.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the switches as taught by Karaoguz to the internal

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structure of the trellis encoder of Gaddam et al, since Karaoguz states at (col. 4, lines 53-58) that such switching would allow data to be encoded at a higher speed and lower reliability transmission signal.

(2) with regards to claim 3;

Weiss further discloses wherein the field synchronization header is acquired by reversing a first segment header of data fields of an N period on a bit basis (pg. 5, [0077], lines 18-22 and pg.6, [0086], lines 16-21).

(3) with regards to claim 4;

Weiss further discloses wherein the transmission synchronization detecting means recognizes that valid TS is being received, if a field synchronization header of a value is detected in the first segment header and the value of is detected in the segment headers of the other data fields (fig. 11,84, pg. 10, [0112], lines 1-18 and pg. 11, [0116], lines 12-16).

(4) with regards to claim 5;

Weiss further discloses wherein the N value is adjusted based on the communication channel environment between the broadcasting station and the transmitting stations, and the M value is adjusted based on the communication channel environment between the broadcasting station and the transmitting stations (pg.1, [0003] - [0004] and pg.2, [0012]).

(5) with regards to claim 6;

Weiss in (figs. 1 and 5) discloses a terrestrial digital broadcasting method using a single frequency network (pg.1, [0001], lines 2-5), comprising the steps of:

a) inserting a field synchronization header to transport stream (TS) transmitted to a plurality of transmitting stations in a predetermined data field period N in a broadcasting station (fig. 5, 16 and pg.4, [0075], lines 3-6 , pg. 9, [0106], lines 7-14);

b) detecting (fig. 6, 51) the field synchronization header and synchronizing starting points of the TS inputted to each transmitting station in the transmitting stations (page 5, [0077]);

c) synchronizing the TS outputted to receiving stations by generating initialization symbols of a predetermined length every predetermined data field period M with respect to the inputted signal (fig. 6, 36 and col. 5, [0078]),

d) broadcasting the synchronized TS (fig. 1 and page 5, [0077]) to the receiving stations(fig. 2, 25).

Weiss discloses trellis encoding means (fig. 6, 36 and fig. 12, pg. 11, [0119]-[0120]), a memory (31) and a precoder (36), but Weiss does not disclose

(a) initializing output values of a trellis coded modulation (TCM) encoder and a memory of the TCM encoder performing switching to values stored in the memory of the TCM encoder instead of input signals to the TCM encoder every M period, wherein the TCM encoder includes a first feedback loop to initialize the memory of the TCM encoder after receiving the values stored in the memory of the TCM encoder from the first switching unit; and

(b) initializing output values of a precoder and a memory of the precoder by performing switching to values stored in the memory of the precoder instead of input signals to the precoder every M period, wherein the precoder includes a second

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feedback loop to initialize the memory of the precoder after receiving the values stored in the memory of the precoder from the second switching unit.

(c) a first and a second switching unit

(ii) with regards to items (a) and (b) above;

However, Gaddam et al in the same endeavor (Trellis encoder) discloses in (fig. 1, 100 and fig.2, 200) the internal structure of a trellis encoder. Input signals x_1 , x_2 , precoder (110), memory (115), encoder (120), memory (122,125), feed back loops in the precoder and encoder and a mapper 250 (col. 1, lines 25-48 and col.3, lines 9-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the trellis encoder as taught by Gaddam et al in the internal structure of a trellis encoder in order to process input data and generating symbols. The selection of any of these known equivalents to encode data would be within the level of ordinary skill in the art.

(i) with regards to item (a) above;

However, Karaoguz in the same endeavor, TCM encoder with feed back is discloses in (fig.16). A first switch (143) is controlled by SELECT0, a signal sent from the transmit control unit. Data signal D_n0 is feed into the input. A second switch (145) takes in input data D_n1 (col. 10, lines 39-66). In col. 4, lines 19-27 teaches that a switching arrangement can be provided that serves to reroute the inputs to the mapper so as to effect the mapping.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the switches as taught by Karaoguz to the internal

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structure of the trellis encoder of Gaddam et al, since Karaoguz states at (col. 4, lines 53-58) that such switching would allow data to be encoded at a higher speed and lower reliability transmission signal.

(6) with regards to claim 8;

Weiss further discloses wherein the field synchronization header is acquired by reversing a first segment header of data fields of an N period on a bit basis (pg. 5, [0077], lines 18-22] and pg.6, [0086], lines16-21).

(7) with regards to claim 9;

Weiss further discloses wherein the transmission synchronization detecting means recognizes that valid TS is being received, if a field synchronization header of a value is detected in the first segment header and the value of is detected in the segment headers of the other data fields (fig. 11,84, pg. 10, [0112], lines 1-18 and pg. 11, [0116], lines 12-16).

(8) with regards to claim10;

Weiss further discloses wherein the N value is adjusted based on the communication channel environment between the broadcasting station and the transmitting stations, and the M value is adjusted based on the communication channel environment between the broadcasting station and the transmitting stations (pg.1, [0003] - [0004] and pg.2, [0012]).

Conclusion

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6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

November 26, 2008
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611